

## Abstract

An apparatus and method for spectroscopic measurement of an analyte in a sample is provided. The apparatus comprises a source of electromagnetic radiation (EMR) producing a light path, an aperture located within the light path and between the EMR source and a sample slot, and a photodetector. The apparatus also has a primary calibration algorithm that is in operative association with the spectroscopic apparatus. Examples of analytes that may be measured using this apparatus include, but are not limited to Total-Hemoglobin, Met-Hemoglobin, Hemoglobin-based blood substitutes and any Met-Hemoglobin equivalent. The measurement of Met-Hemoglobin may be used to provide an accurate measurement of Total-Hemoglobin in whole blood, or Hemoglobin when used as an indicator of hemolysis. The measurement of Met-Hemoglobin may also be also used as a means of monitoring the degradation or reversal of degradation of Hemoglobin-based blood substitutes, or as a means of monitoring the oxidation or reversal of oxidation of Hemoglobin to Met-Hemoglobin.